FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

16 to 22 March, 2014 (Week 12)

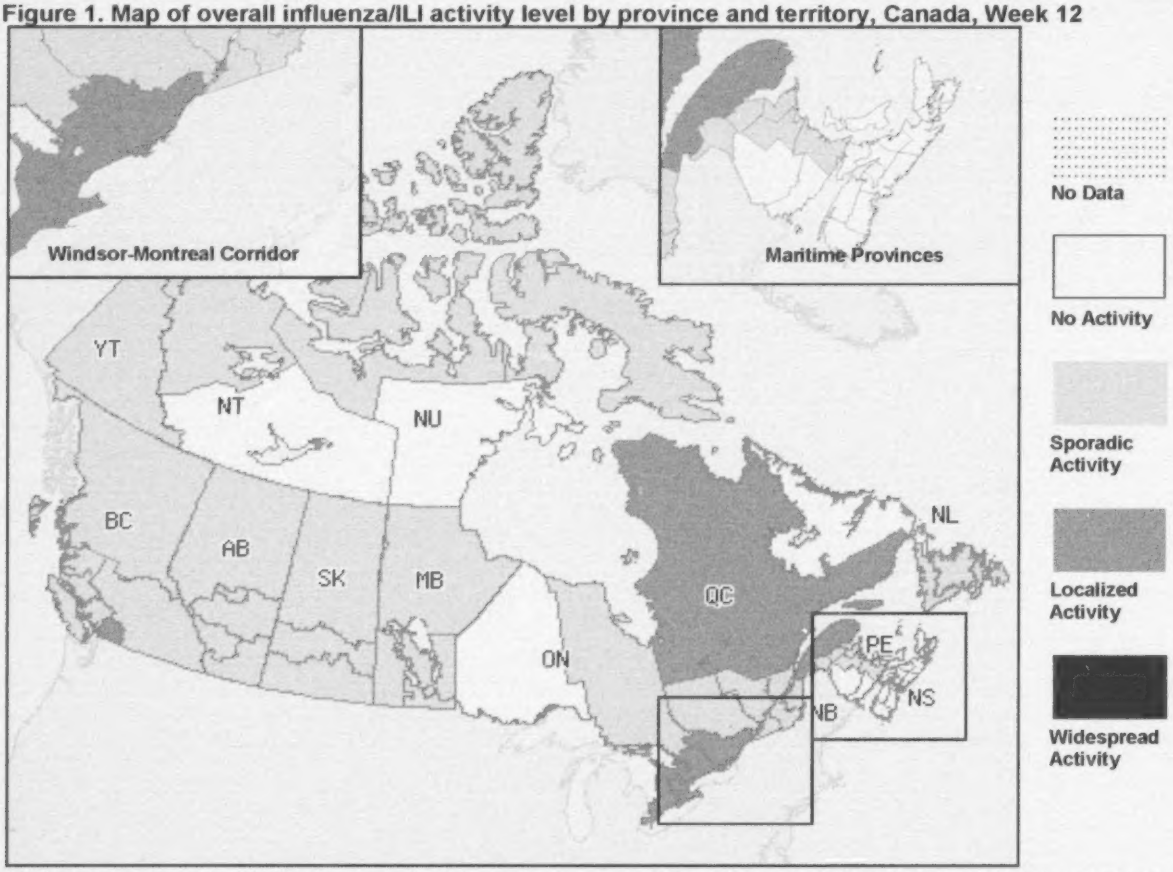
Overall Summary

- In week 12, influenza activity in Canada continued to decrease slowly. Overall, the influenza A(H1N1) virus remains the most common influenza virus this season, however, most influenza viruses circulating in recent weeks have been influenza B.
- While the influenza A(H1N1) virus has mostly affected adults 20-64 years of age this season, influenza B is having a greater impact on adults 65 years of age and older, as well as young persons 5 to 19 years of age.
- As of week 12, 3,700 hospitalizations and 204 deaths have been reported from participating regions, which is comparable to reports in past influenza seasons.
- Influenza activity remains within expected levels for this time of year.

Influenza/ILI Activity (geographic spread)

The number of regions reporting localized or widespread influenza activity has been stable in recent weeks, with the majority of activity reported in Eastern Canada. In week 12, no regions reported widespread activity and eight regions (BC(1), ON(5), and QC(2)) reported localized activity (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 12

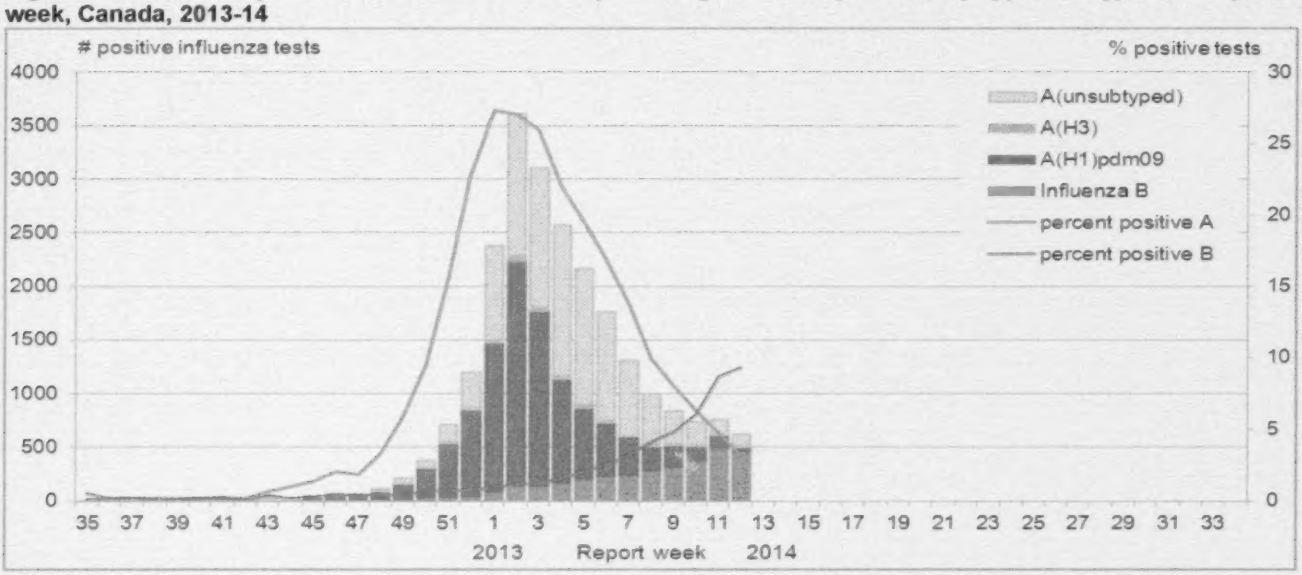


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests decreased from 759 in week 11 to 619 (12.4% of tests) in week 12. Influenza B remained the predominant virus in week 12, representing 75% of influenza detections (Figure 2). The highest proportions of influenza B have been reported from Newfoundland & Labrador (30.4%) and Quebec (25.8%), followed by Ontario (13.6%) and British Columbia (9.3%). Despite the late-season circulation of influenza B, the predominant influenza virus this season remains A(H1N1)pdm09 (Table 1). Among the 19,468 cases for which information on age and type/subtype has been received this season, 54.5% were 20-64 years of age (Table 2). Significantly greater proportions of influenza B cases have been ≥65 years of age and 5-19 years of age compared to cases of A(H1N1)pdm09. Influenza detections among persons ≥65 years of age have been similar for the past 6 weeks, while detections in other age-groups are declining.

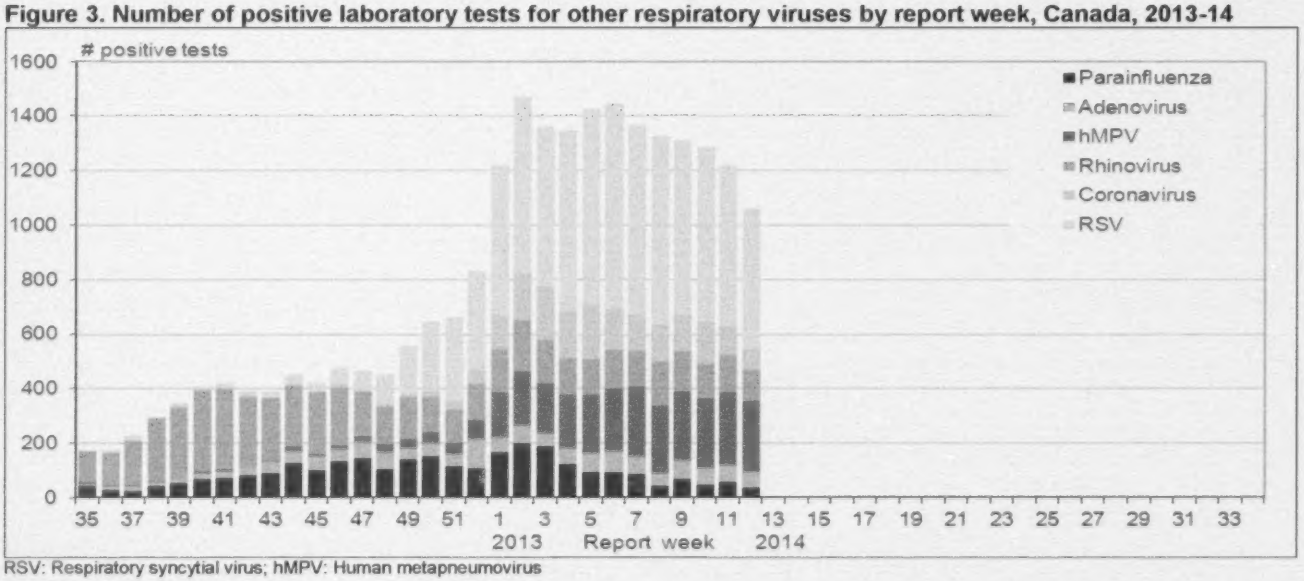
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The number of positive tests for RSV has been declining gradually over recent weeks, similar to the trend observed in recent seasons. The number of positive tests for parainfluenza, adenovirus and coronavirus decreased in week 12, and has been declining since early February. Detections of rhinovirus have been relatively stable during the winter months, although these detections represent an increasing percentage of tests positive since early January. The number of positive tests for human metapneumovirus has been higher than during the same period last season and does not yet appear to have reached its peak (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (March 16 to 22, 2014)					Cumulative (August 25, 2013 to March 22, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	17	0	0	17	24	1770	1589	52	129	181
AB	38	4	2	32	24	3763	3393	57	313	176
SK	1	1	0	0	5	1350	973	6	371	49
MB	8	5	0	3	2	630	451	1	178	17
ON	53	28	11	14	191	5537	2447	276	2814	873
QC	33	3	0	30	197	5266	675	3	4588	1834
NB	0	0	0	0	7	1488	370	1	1117	30
NS	1	0	0	1	1	164	134	4	26	4
PE	0	0	0	0	0	118	117	0	1	1
NL	6	0	0	6	11	346	104	0	242	151
Canada	**157**	**41**	**13**	**103**	**462**	**20432**	**10253**	**400**	**9779**	**3316**
Percentage[2]	25.4%	26.1%	8.3%	65.6%	74.6%	86.0%	50.2%	2.0%	47.9%	14.0%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

Age groups (years)	Weekly (March 16 to 22, 2014)					Cumulative (August 25, 2013 to March 22, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	22	2	3	17	26	3195	1415	34	1746	312	3507	18.0%
5-19	6	1	0	5	16	1297	694	17	586	478	1775	9.1%
20-44	22	6	1	15	41	5006	2766	39	2201	523	5529	28.4%
45-64	16	3	0	13	54	4374	2361	49	1964	709	5083	26.1%
65+	20	1	1	18	128	2427	980	104	1343	1012	3439	17.7%
Unknown	0	0	0	0	0	132	102	18	12	3	135	0.7%
Total	86	13	5	68	265	16431	8318	261	7852	3037	19468	100.0%
Percentage[2]	24.5%	15.1%	5.8%	79.1%	75.5%	84.4%	50.6%	1.6%	47.8%	15.6%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 1,586 influenza viruses [76 A(H3N2), 1227 A(H1N1)pdm09 and 283 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Sixteen influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

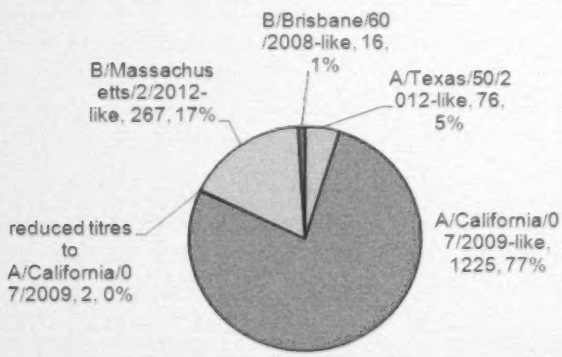

B/Brisbane/60 /2008-like, 16, 1%
B/Massachus etts/2/2012- like, 267, 17%
A/Texas/50/2 012-like, 76, 5%
reduced titres to A/California/0 7/2009, 2, 0%
A/California/0 7/2009-like, 1225, 77%

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 1,586

The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 1,191 influenza viruses for resistance to oseltamivir and all but two were sensitive. All 1,176 viruses tested for resistance to zanamivir were sensitive. All 1,320 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

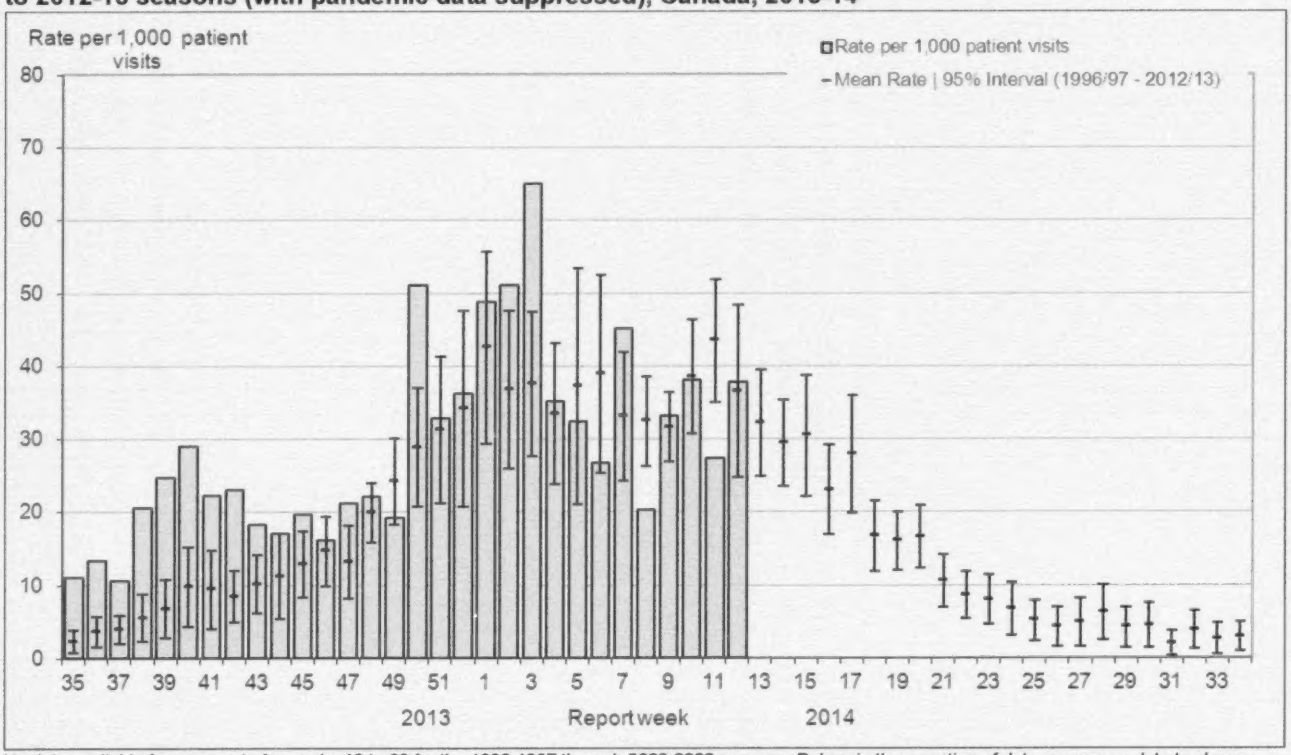
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	55	0	55	0	94	94 (100%)
A (H1N1)	989	2 (0.2%)	977	0	1226	1226 (100%)
B	147	0	144	0	NA[1]	NA[1]
TOTAL	1191	2 (0.2%)	1176	0	1320	1320 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased from 27.4/1,000 in week 11 to 37.7/1,000 in week 12; which was within the expected range for week 12 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

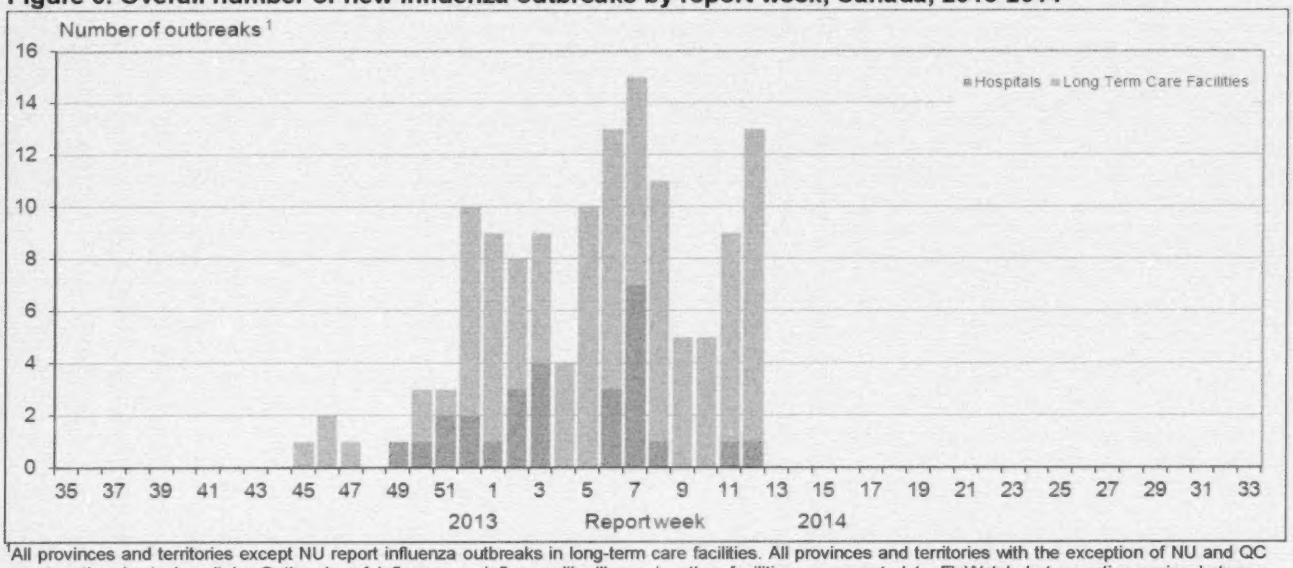


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 12, thirteen new influenza outbreaks were reported: 12 in long-term care facilities (LTCF) and one in a hospital (Figure 6). Among the ten outbreaks with available data, eight (seven LTCF and the hospital outbreak) were reported to be due to influenza B.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

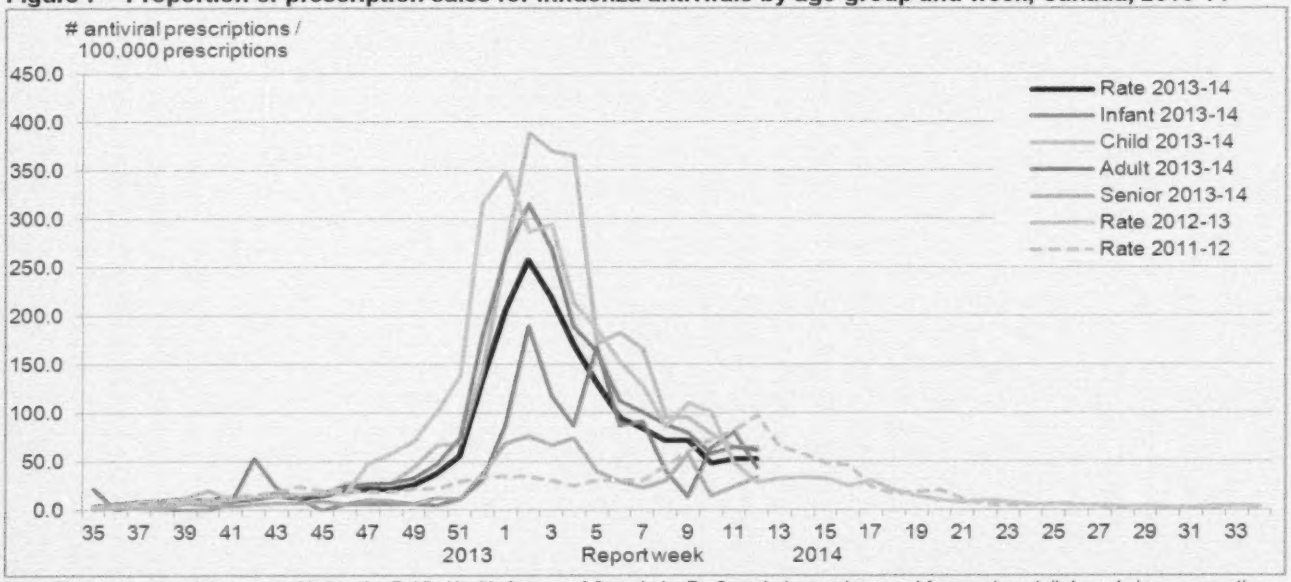


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

In week 12, the proportion of prescriptions for antivirals among children 2-18 years of age and adults 19-64 years of age was similar to the previous week. Within the 2-18 year age-group, increases in the proportion of prescriptions for antivirals were observed among children 2-9 years of age and decreases among those 10-19 years of age. Overall this season, the largest proportion of prescriptions for antivirals has been among children 2-18 years of age and adults 19-64 years of age, in keeping with laboratory detections of influenza (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 12, 12 new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 22 in week 11; however, two centres did not report in week 12. In keeping with the increased circulation of influenza B, influenza B was reported in 5 of the 12 cases in week 12 (Figure 8a). Although the number of cases is small, a greater proportion of cases with influenza B this season have been children between 2 and 10 years of age compared to A(H1N1)pdm09. No ICU admissions or deaths were reported in week 12.

To date this season, a total of 625 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 87% of which have been influenza A, and almost all of those subtyped (97%) were A(H1N1)pdm09. Children <5 years of age represent 74% of cases to date (Table 4). Eighty-eight ICU admissions have been reported, of which 58 (68%) were children <5 years of age (Figure 9a). All but six were cases with influenza A, and 96% of those subtyped were A(H1N1)pdm09. Among the 85 ICU cases with available data, 54 (64%) were reported to have underlying medical conditions. No deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 12, 15 new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 62 in week 11. For a third week in a row, the majority of hospitalizations were associated with influenza B (Figure 8b). All but three hospitalizations occurred among adults ≥45 years of age. There was one ICU admission in an adult ≥65 years of age with influenza B, and no deaths reported in week 12.

To date this season, 1328 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 1138 (85.7%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). ICU admission was required for 220 hospitalizations, all but 11 of which were cases with influenza A (115 A(H1N1)pdm09, seven A(H3N2) and 87 A(unsubtyped)). Approximately 80% of hospitalizations and ICU admissions were ≥45 years of age. Of the 170 ICU admissions with available information, 150 (88.2%) were reported to have at least one comorbidity and of the 188 ICU admissions with available information 134 (71.3%) reported not having been vaccinated this season. Sixty-one deaths have been reported, all but five with influenza A (33 A(H1N1)pdm09, two A(H3N2) and 21 A(unsubtyped)); seven cases 20-44 years of age, 27 cases 45-64 years of age and 27 cases ≥65 years of age (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

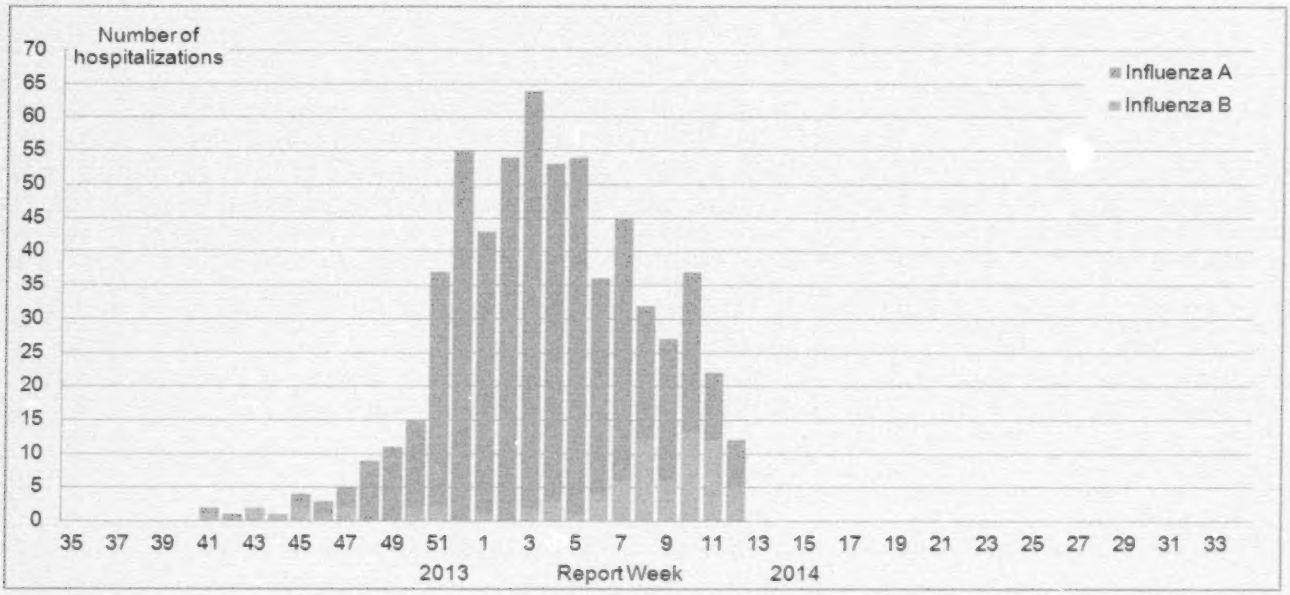
Age groups	Cumulative (25 Aug. 2013 to 22 Mar. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	103	33	0	70	4	107 (17%)
6-23m	160	46	1	113	11	171 (27%)
2-4y	161	53	3	105	26	187 (30%)
5-9y	81	25	0	56	31	112 (18%)
10-16y	41	15	1	25	7	48 (8%)
Total	546	172	5	369	79	625
% [1]	87.4%	31.5%	0.9%	67.6%	12.6%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

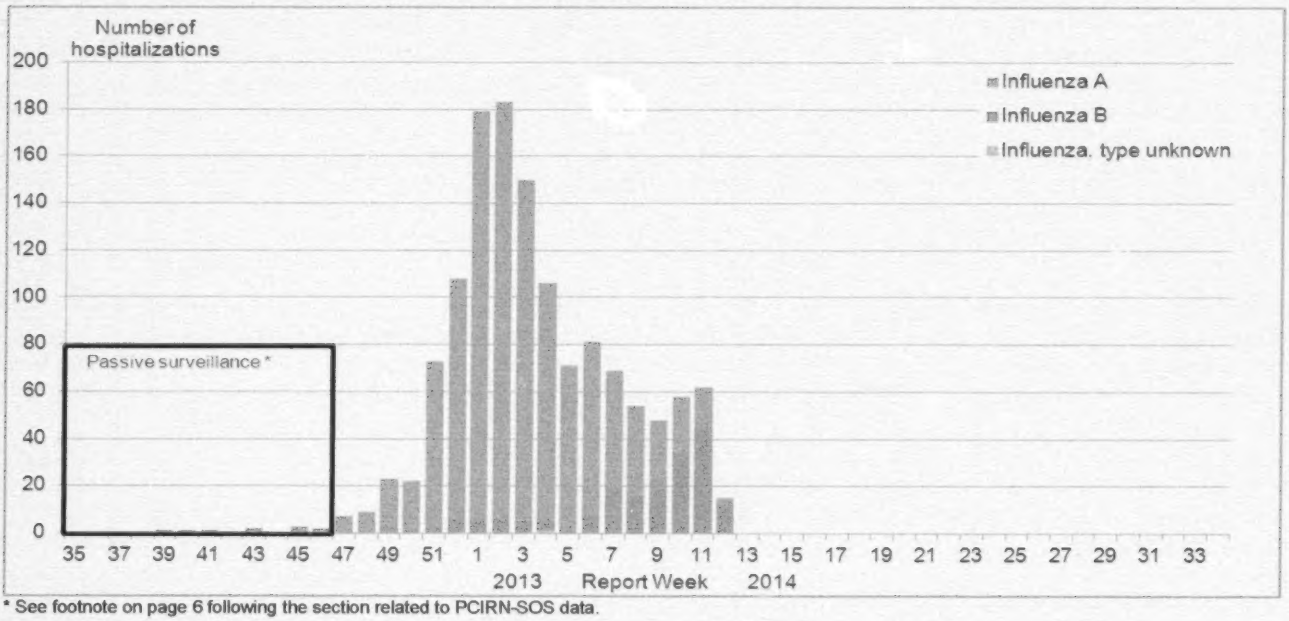
Age groups (years)	Cumulative (25 Aug. 2013 to 22 Mar. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	13	4	0	9	2	15 (1%)
20-44	244	128	4	112	12	256 (19%)
45-64	444	206	7	231	43	487 (37%)
65+	434	207	36	191	132	566 (43%)
Total	1135	545	47	543	189	1324
% [1]	86%	48%	4%	48%	14%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * One case for which the influenza type has not yet been reported, and three cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



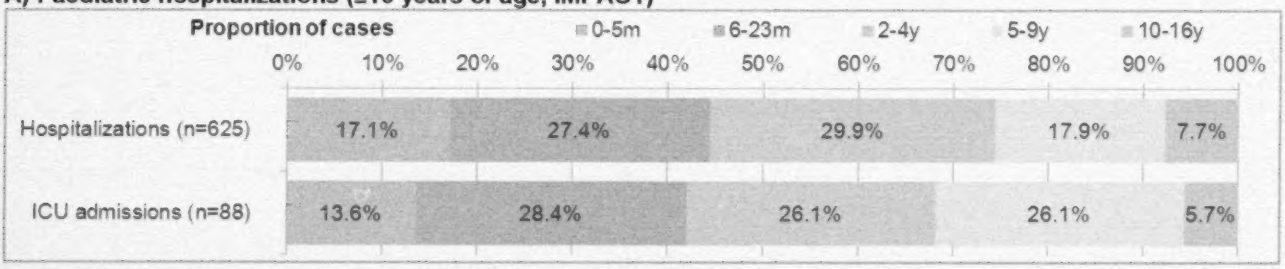
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



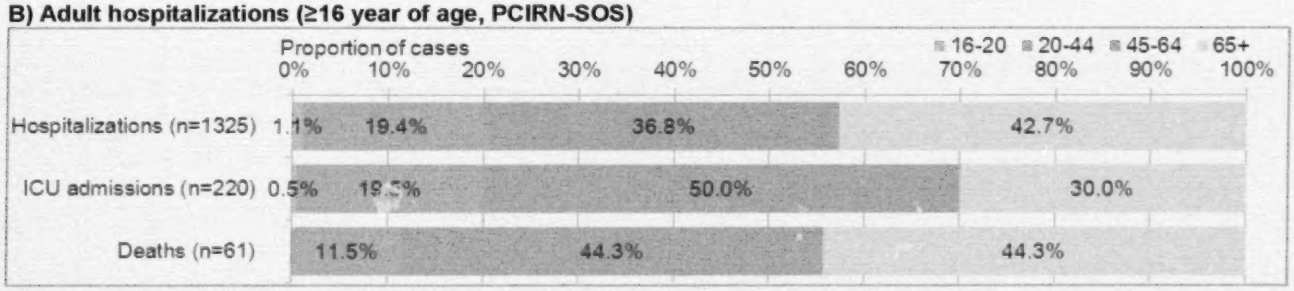
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 12, 119 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* As with other surveillance indicators in week 12, the majority were cases of influenza B (71, 59.7%). Two ICU admissions were reported in week 12, one adult 20-44 years of age and the other with age not reported, both with influenza A. Seven deaths were reported in week 12; four cases were ≥65 years of age, and three of the seven had influenza B. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 3,700 influenza-associated hospitalizations have been reported, 91.4% with influenza A. The majority (58.0%) of hospitalizations have been cases 45 years of age of older. A significantly greater proportion of cases of influenza B have been ≥65 years of age, and 5-19 years of age, compared to cases of A(H1N1)pdm09 this season (Table 6). A total of 326 ICU admissions have been reported this season, of which 66.8% were adults 20-64 years of age. A total of 204 deaths have been reported. The highest proportion of deaths has been among adults 20-64 years of age (49.5%), followed by adults ≥65 years of age (41.1%). In keeping with the late-season circulation, influenza B has been increasingly reported among hospitalized cases of influenza. To date this season, influenza B has been reported in 8.6% of hospitalizations and 6.9 % of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 22 Mar. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	579	277	7	295	44	623 (17%)
5-14	127	64	5	58	41	168 (5%)
15-19	34	19	3	12	2	36 (1%)
20-44	584	413	4	167	17	601 (16%)
45-64	1068	680	23	365	71	1139 (31%)
65+	869	451	67	351	137	1006 (27%)
Unknown	122	95	3	24	5	127 (3%)
Total	3383	1999	112	1272	317	3700
Percentage[1]	91.4%	59.1%	3.3%	37.6%	8.6%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Nine new cases of human infection with influenza A(H7N9) have been reported by the World Health Organization since the last FluWatch report. Globally to March 27, 2014, the WHO has been informed of a total of 400 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 121 deaths.

PHAC – Avian influenza A(H7N9)

WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Seven new laboratory-confirmed cases of MERS-CoV, with three deaths, have been reported by the World Health Organization since the last FluWatch report. Globally, from September 2012 to date, the WHO has been informed of a total of 206 laboratory-confirmed cases of infection with MERS-CoV, including 86 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)

WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.